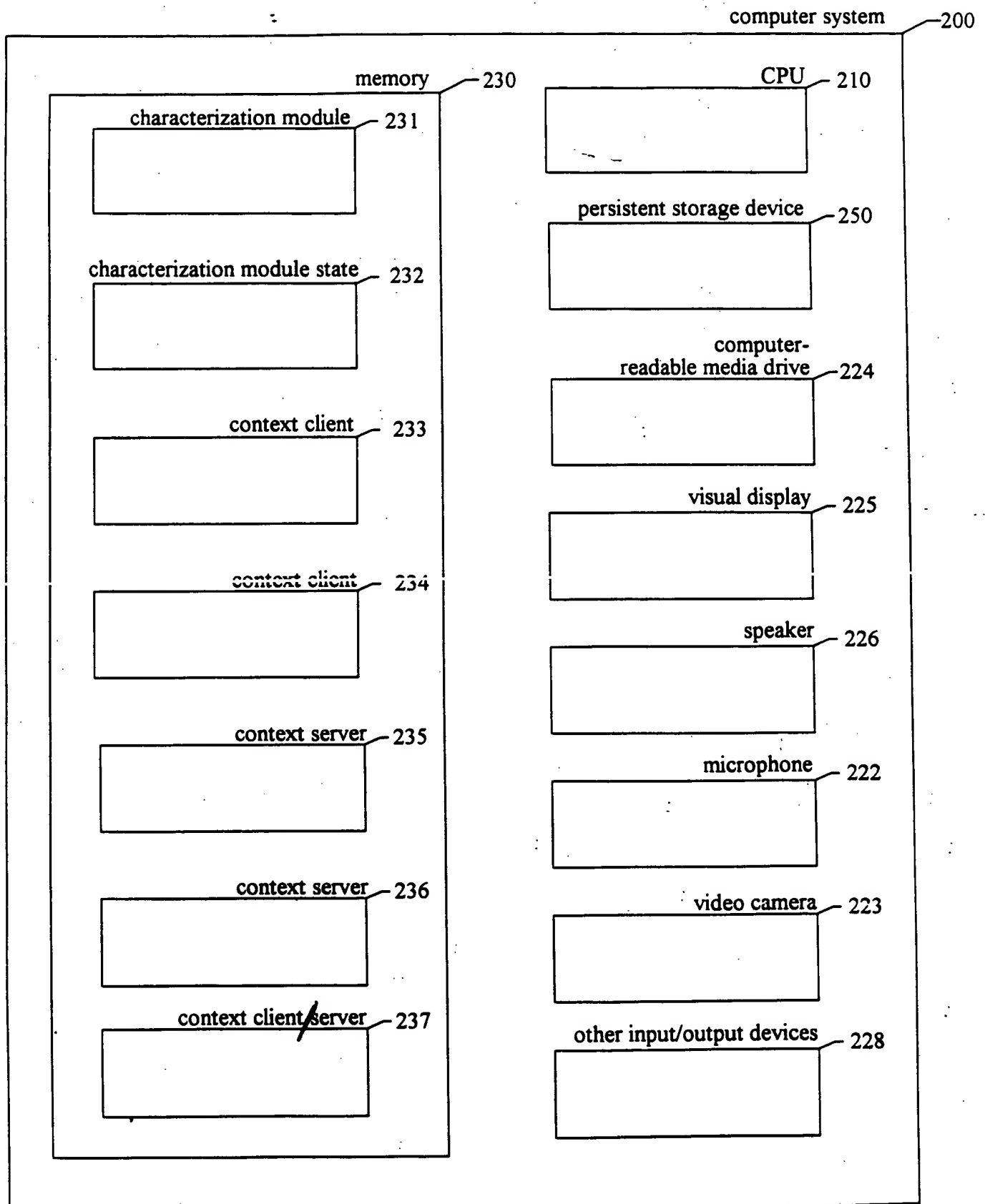


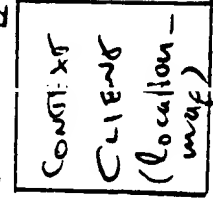
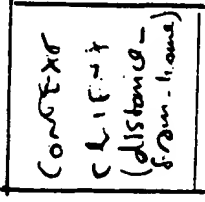
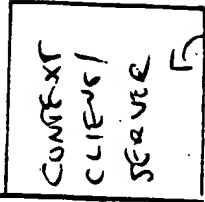
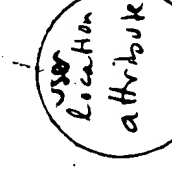
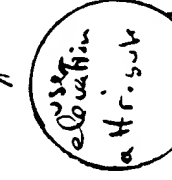
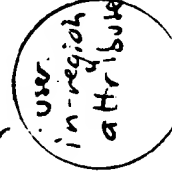
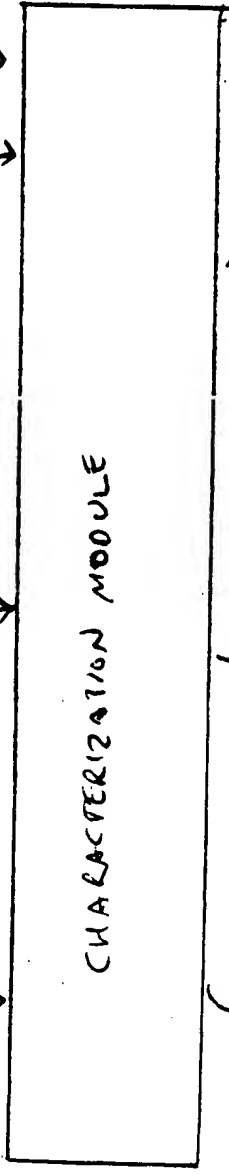
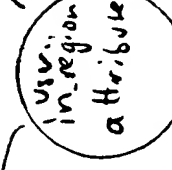
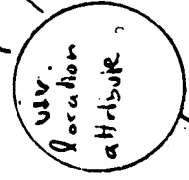
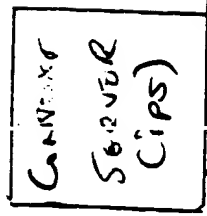
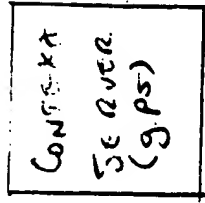
Fig. 1

008211-664260



**Fig. 2**

310



340

350

FIG 3

300

341

351

352

332

330

region boundary 311

## context server table

context server name	version	installation date	filename	request handler
gps	1	2/10/2000	gps.exe	(reference)
ips	1	2/21/2000	ips.exe	(reference)
location region analysis	1	2/10/2000	l r a.exe	(reference)

**FIG 4**

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	0

FIG

008277 66242460

-600

context client name		message handler		context client table	
location map		(reference)			
distance from home		(reference)			
region analysis		(reference)			

FIG 6

-611

-612

-700

attribute name		context server name		value		uncertainty		timestamp		units		number of context clients consuming	
user.location	gps			47° 38.73' N, 122° 18.43' W		0° 09'		13:11:04.023 2/22/2000		degrees/minutes		2	
user.location	ips			47° 38.745' N, 122° 18.424' W		0° 021'		13:11:01.118 2/22/2000		degrees/minutes		2	
user.elevation	ips			22		.5		13:11:01.118 2/22/2000		meters		1	
user.in_region	location_region_analysis			none		none		none		none		1	

attribute instance table

-701  
 -702  
 -703  
 -704

-711  
 -712  
 -713  
 -714  
 -715  
 -716  
 -717

FIG 7

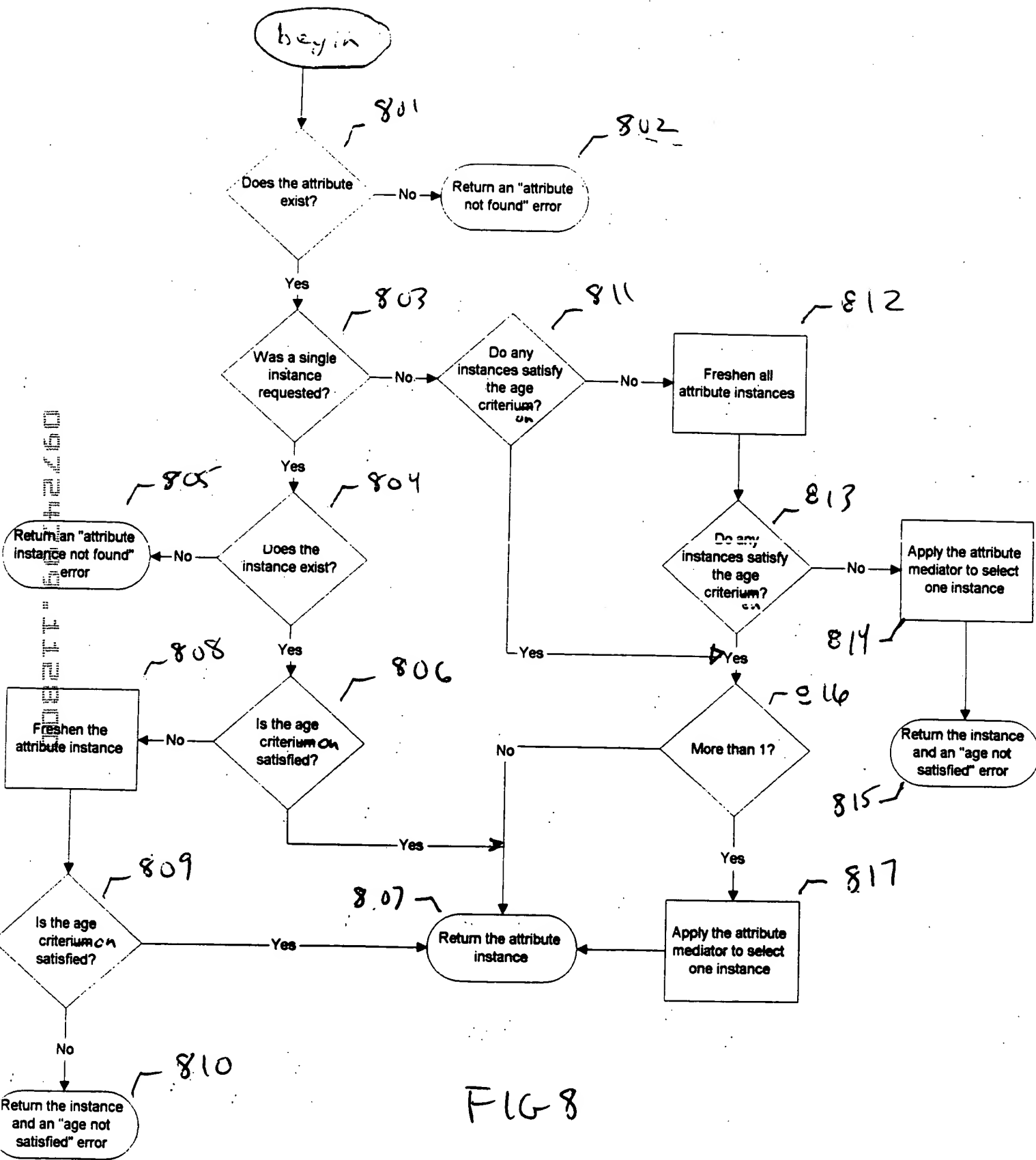


FIG 8

OBJECT "SECRET"

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22.25	.5	13:11:06.565 2/22/2000	meters	1
user.in region	region analysis	none	none	none	none	1

900

916

915

914

913

912

911

FIG 9

condition table

condition name	context client name	first logical parameter	second logical parameter	comparison value	logical operator
in region true	region analysis	user.in region	none	TRUE	=

1000

1016

1015

1014

1013

1012

1011

FIG 10

003277 6624260

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries crossed	region_analysiss	in_region_true	TRUE or FALSE	30	13:11:29.101 2/22/2000	(reference)	no

FIG 11

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries crossed	region_analysiss	in_region_true	TRUE or FALSE	30	13:11:59.101 2/22/2000	(reference)	yes

FIG 12



A310 A320

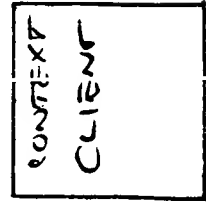
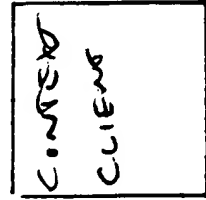
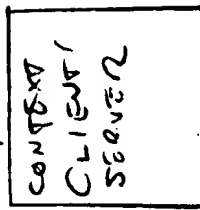
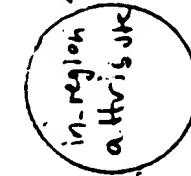
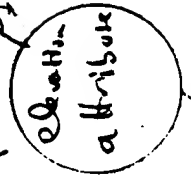
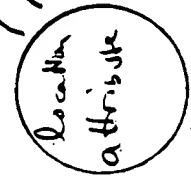
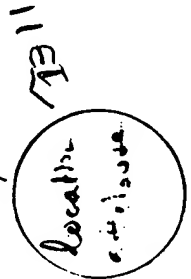
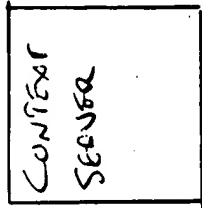
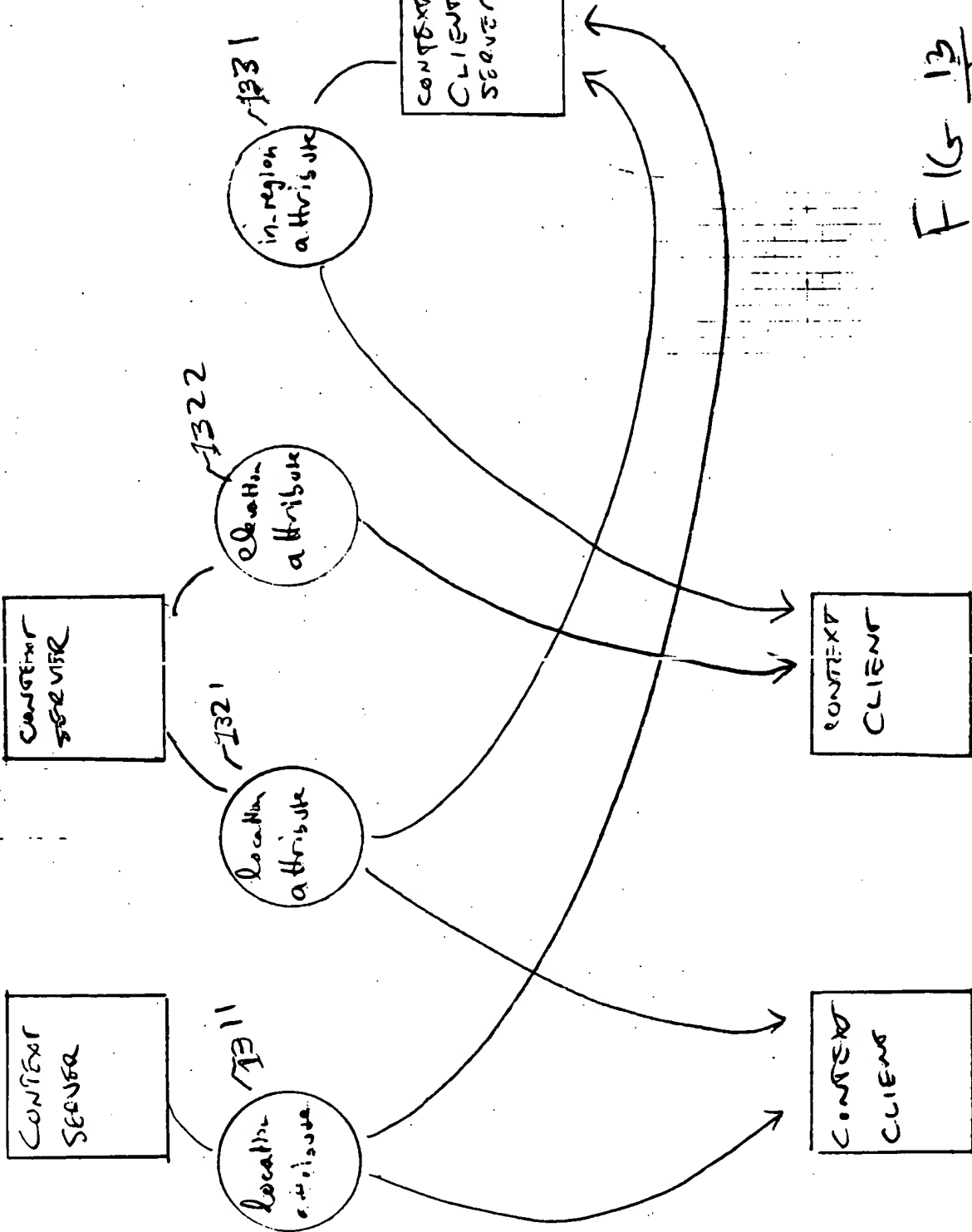


FIG 13



1401 ~  
1402 ~  
1403 ~  
1404 ~

attribute name	context client name
user.location	distance_from_home
user.in_region	location_map
user.location [gps]	location_region_analysis
user.elevation	location_map

L 1411

2 1412

[illegible]

**User.**

Desired\_privacy\_level  
 Interruptibility  
 Speed  
 Direction  
 Acceleration  
 Availability.  
   Cognitive\_availability  
   Tactile\_availability  
   Manual\_availability  
   Visual\_availability  
   Oral\_availability  
   Auditory\_availability  
 Proximity.<Item or place name>  
 Mood.  
   Happiness  
   Sadness  
   Anger  
   Frustration  
   Confusion  
 Activity.  
   Driving  
   Eating  
   Running  
   Sleeping  
   Talking  
   Typing  
   Walking  
 Location.  
   Place\_name  
   Latitude  
   Longitude  
   Altitude  
   Room  
   Floor  
   Building  
   Address  
   Street  
   City  
   County  
   State  
   Country  
   Postal\_Code  
 Destination. (same as User.Location.)  
 Physiology.  
   Pulse  
   Body\_temperature  
   Blood\_pressure  
   Respiration

**Person.**<name or ID>. (same as User.)

**Platform.****UI.**

Oral\_input\_device\_availability  
 Manual\_input\_device\_availability  
 Tactile\_output\_device\_availability  
 Visual\_output\_device\_availability  
 Auditory\_output\_device\_availability

**Platform. (continued)****CPU.**

Load  
 Speed

**Memory.**

Total\_capacity  
 Used

**Storage.**

Total\_capacity  
 Used

**Connectivity.**

Connection\_status  
 Connection\_speed  
 Connection\_type/device  
 Connection\_activity

**Power.**

Power\_source  
 Power\_level

**Environment.****People.**

Nearest  
 Number\_present  
 Number\_close

**Local.**

Time  
 Date  
 Temperature  
 Pressure  
 Wind\_speed  
 Wind\_direction  
 Absolute\_humidity  
 High\_forecast\_temperature  
 Low\_forecast\_temperature  
 People\_present  
 Ambient\_noise\_level  
 Ambient\_light\_level  
 Days.<previous or future>.  
   High\_temperature  
   Low\_temperature  
   Precipitation\_type  
   Precipitation\_amount

Place.<place name>. (same as Environment.Local)

**Application.****Mail.**

Available  
 New\_messages\_waiting  
 Messages\_waiting\_to\_be\_sent

**Phone.**

Available  
 In\_use  
 On/off  
 Notification\_mechanism  
 Call\_incoming  
 Caller\_ID

**Sound\_recorder.**

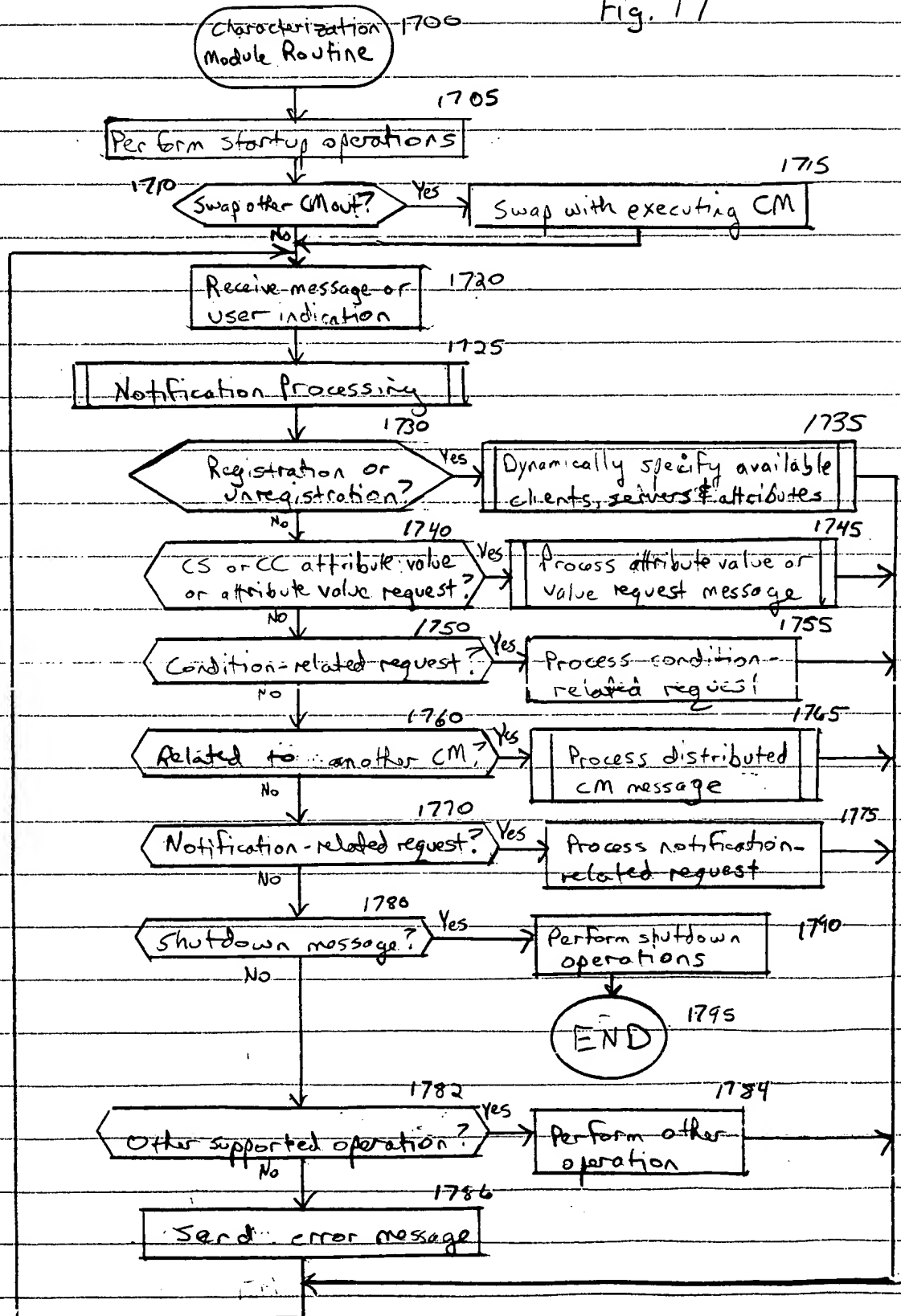
Available  
 Recording

Fig. 15

- 1) User Setting
    - a) Mental Context
      - i) Meaning
      - ii) Cognition
        - (1) Divided User Attention
        - (2) Task Switching
        - (3) Background Awareness
      - iii) Solitude
      - iv) Privacy
        - (1) Desired Privacy
        - (2) Perceived Privacy
      - v) Social Context
      - vi) Affect
    - b) Physical Situation
      - i) Body
        - (1) Biometrics
        - (2) Posture
        - (3) Motion
        - (4) Physical Encumbrment
          - (a) Senses
            - (i) Eyes
            - (ii) Ears
            - (iii) Tactile
            - (iv) Hands
            - (v) Nose
            - (vi) Tongue
          - (b) Workload demands/effects
          - (c) Interaction with computer devices
          - (d) Interaction with people
          - (e) Physical Health
      - ii) Environment
        - (1) Time/Space
        - (2) Objects
        - (3) Persons
          - (a) Audience/Privacy Availability
            - (i) Scope of Disclosure
            - (ii) Hardware affinity for privacy
            - (iii) Privacy Indicator for User
            - (iv) Privacy Indicator for Public
            - (v) Watching Indicator
            - (vi) Being Observed Indicator
      - (4) Ambient Interference
        - (a) Visual
        - (b) Audio
        - (c) Tactile
- 2) Computer
  - a) Power
  - b) Configuration
    - i) User Input Systems
      - (1) Hand/Haptic
        - (a) Keyboard/Keystrokes
      - (2) Voice/Audio
      - (3) Eye Tracking
      - (4) Cursors
        - (a) Axis
        - (b) Resolution
          - (i) Selection
          - (ii) Invocation
        - (c) Accelerators
    - ii) Output Systems
      - (1) Visual
        - (a) Resolution
      - (2) Audio
        - (a) Public/Private
      - (3) Haptic
    - iii) External Resources
      - (1) I/O devices
      - (2) Connectivity
  - c) Data
    - i) Quantity/State
    - ii) Urgency/Importance
      - (1) Use of Prominence
    - iii) Modality
    - iv) Sensitivity/Purpose
      - (1) Privacy Issues
      - (2) Use of Association
      - (3) Use of Safety
    - v) Source/Ownership
      - (1) Types
        - (a) User generated
        - (b) Other computers or people
        - (c) Sensor
        - (d) PC State
      - (2) Use of Association

Fig. 16

Fig. 17



0024709.11800

Notification Processing Subroutine 1725

Fig. 18

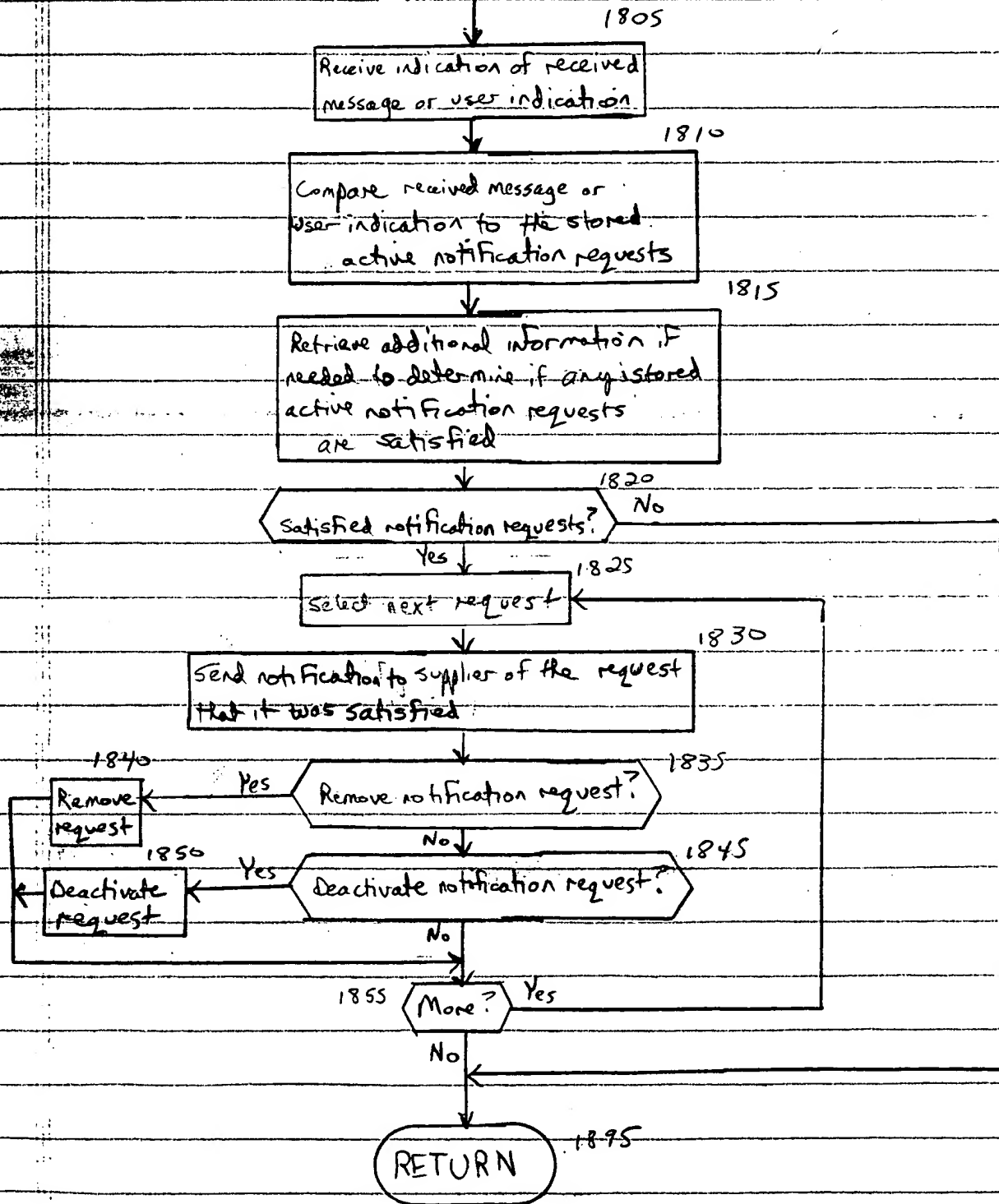


Fig. 19

Dynamically Specify Available  
Clients, Servers, & Attributes  
Subroutine

1735

1905

Receive a registration or  
unregistration message

1910 Need security approval?

Yes

Determine if security  
is satisfied

1915

satisfied?

1925

Send error  
message

client

Related to?

server

attributes

1941

Register new  
client if  
possible

1940 Register?

Yes

1980 Register?

Yes

1982 Select next  
attribute

1960 Register?

Yes

Register new  
server if  
possible

1962

1966 Attributes  
included  
to register?

Yes

1962 Error?

Yes

Send error  
message

1964

1968 Unregister?

Yes

Unregister  
Server

1970

Any currently  
registered attributes  
for the server?

Yes

1972

1992 Unregister?

Yes

Unregister each  
attribute

1994

1990 More?

Yes

1988 Register new  
attribute

1986 Register new  
attribute  
instance

1984 Attribute exists?

Yes

1946 Attributes  
included to  
register?

Yes

1948 Unregister?

Yes

1950 Unregister  
client

1944 Send error  
message

1942 Error?

Yes

1940 Register?

Yes

1941 Register new  
client if  
possible

1942 Error?

Yes

1944 Send error  
message

1946 Attributes  
included to  
register?

Yes

1948 Unregister?

Yes

1950 Unregister  
client

1944 Send error  
message

1942 Error?

Yes

1940 Register?

Yes

1941 Register new  
client if  
possible

1942 Error?

Yes

1944 Send error  
message

1946 Attributes  
included to  
register?

Yes

1948 Unregister?

Yes

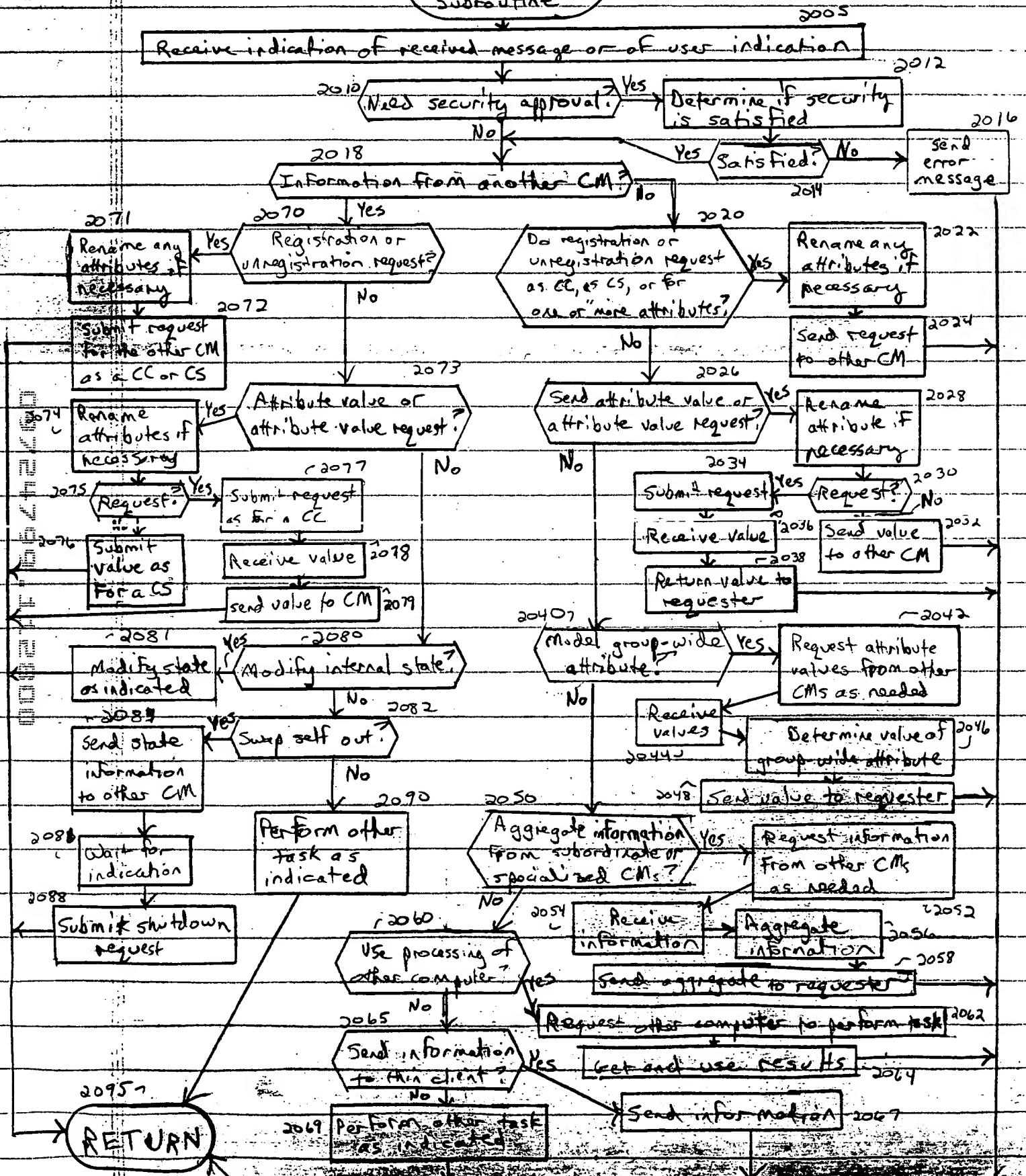
RETURN

1995

# Process Distributed CM Message Subroutine

1765

Fig. 20





1745  
Process Attribute Value  
On Value Request Message  
Subroutine

Fig. 21

2105  
Receive indication of received  
attribute value or value request

Request Value or request? Value

2150  
Identify all attribute  
instances matching  
the request

2152  
Any instances?

2154  
Send error  
message

2156  
Select next instance

2158  
Need new value?

2160  
Pull attribute value  
from server

2162  
Receive value?

2164  
Process received  
attribute value

2166  
More?

2168  
Multiple values  
available?

2170  
Mediate available  
values

2172  
Send mediated value and  
additional information  
to requester

2174  
Single value  
available?

2176  
Send value and  
additional  
information  
to requester

2178  
Send error  
message

2195  
RETURN

2120  
Process received  
attribute value

2122  
Identify all attribute  
value requests that  
match the value

2124  
Any requests?

2130  
Multiple attribute  
instance values?

2132  
Mediate available  
values

2134  
Select mediated value

2136  
Select received value

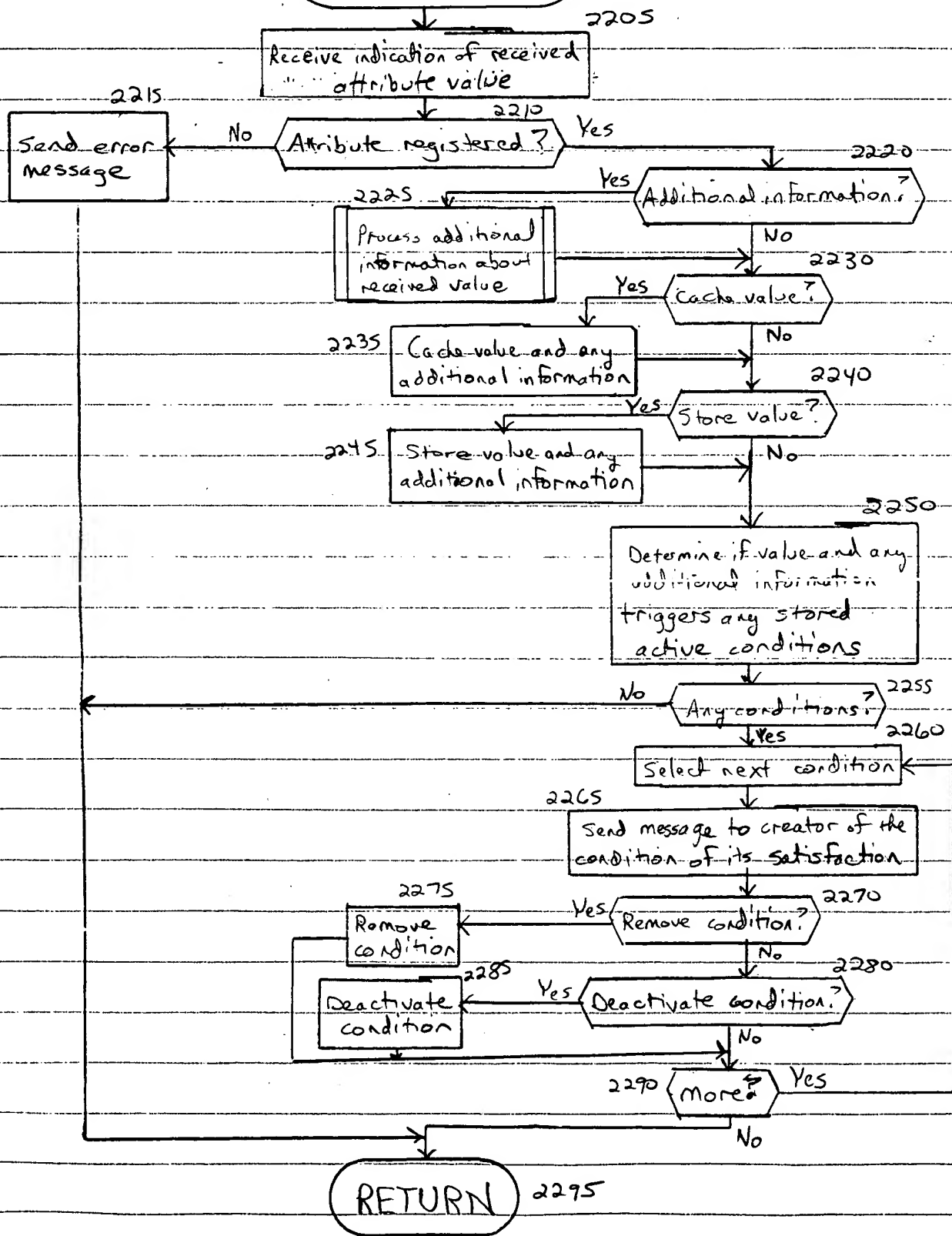
2138  
Select next request

2140  
Push selected attribute  
value to client

2142  
More?

Process Received  
Attribute Value  
subroutine

2200 Fig 22



Process Additional Information  
About Received Value  
Subroutine

Fig. 23

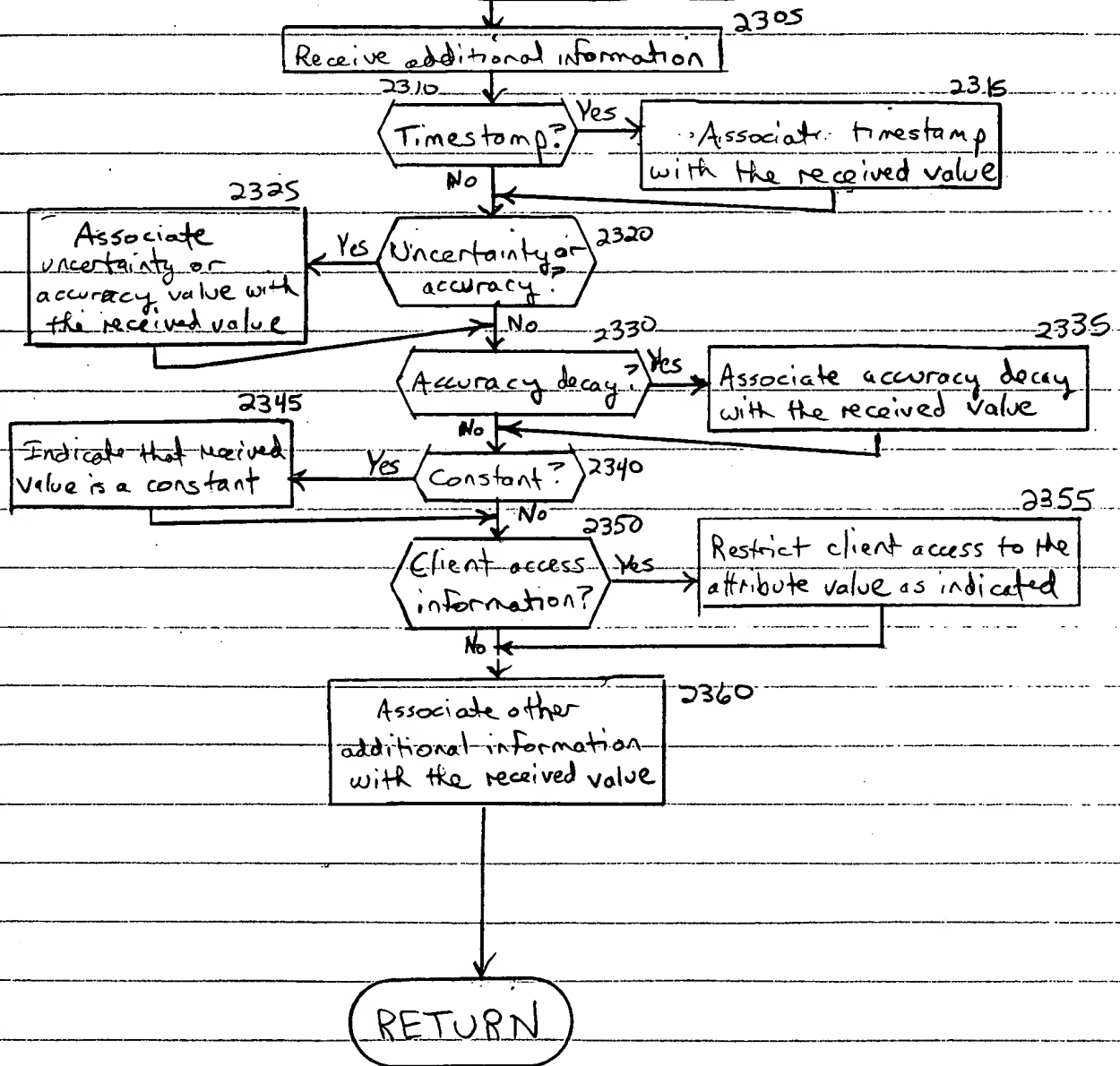


Fig. 24

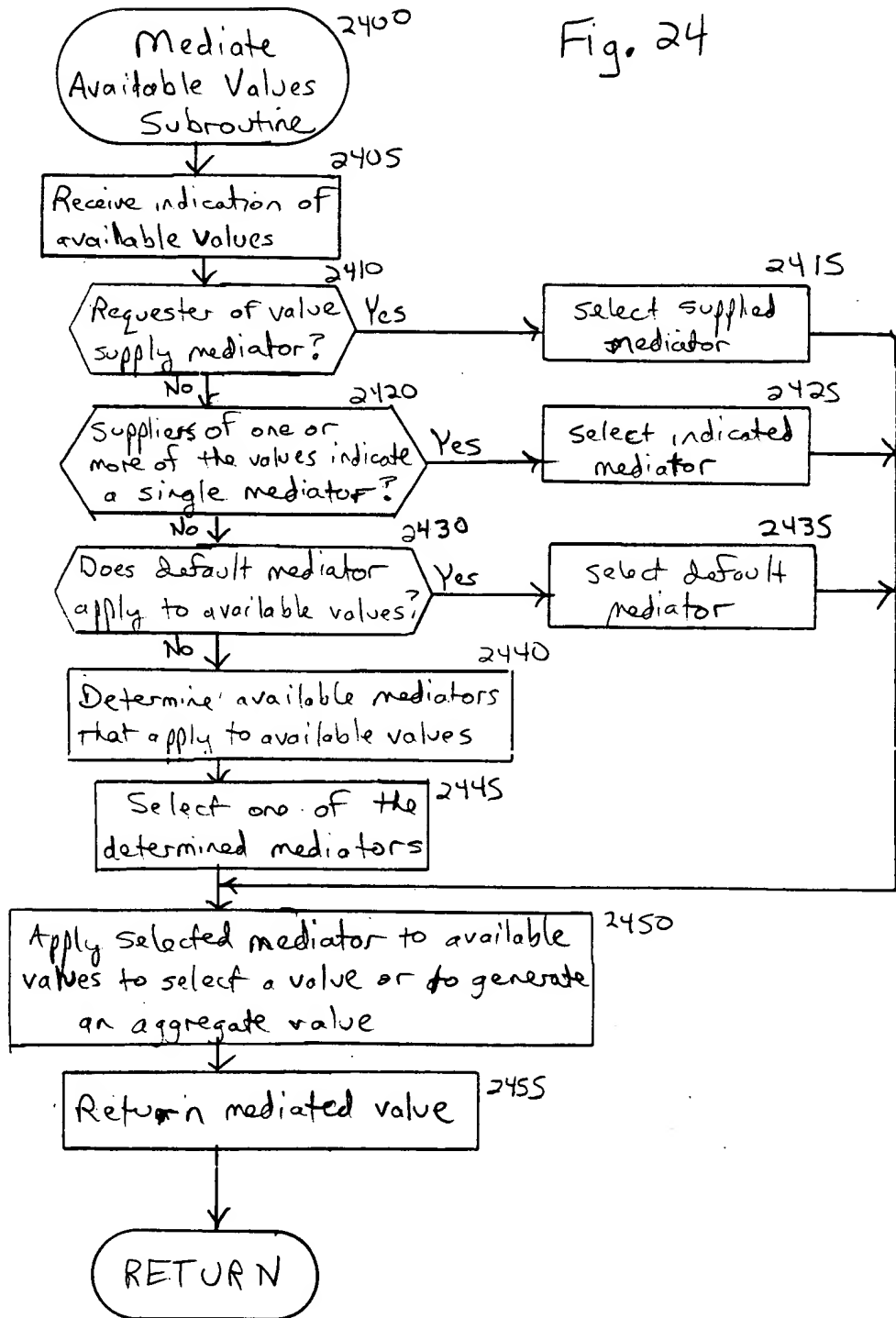
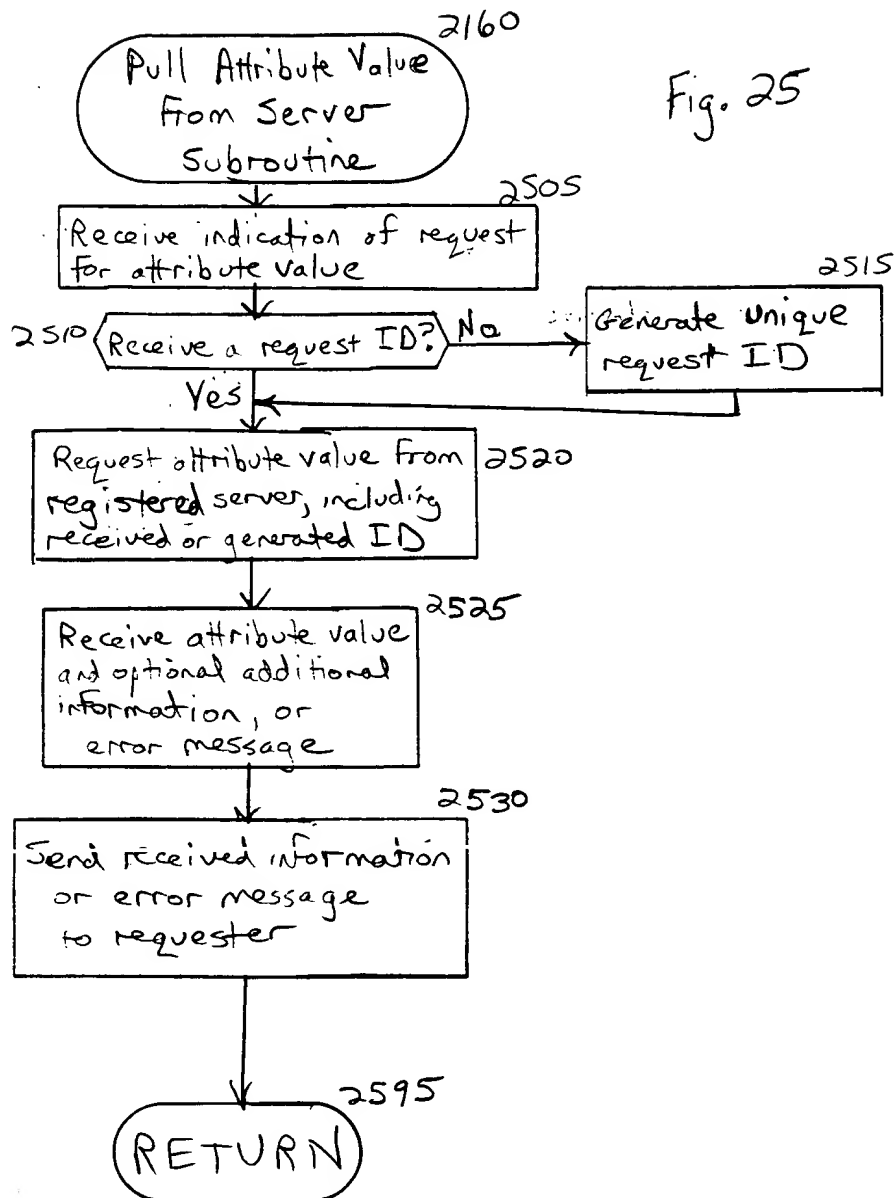
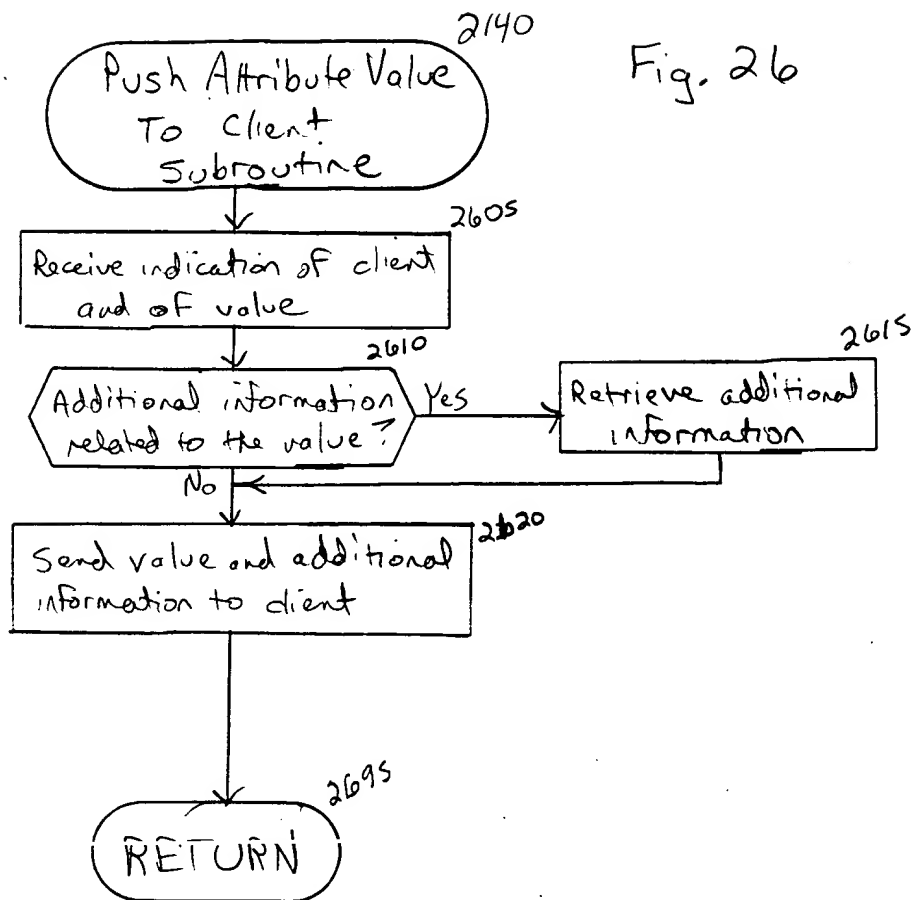


Fig. 25

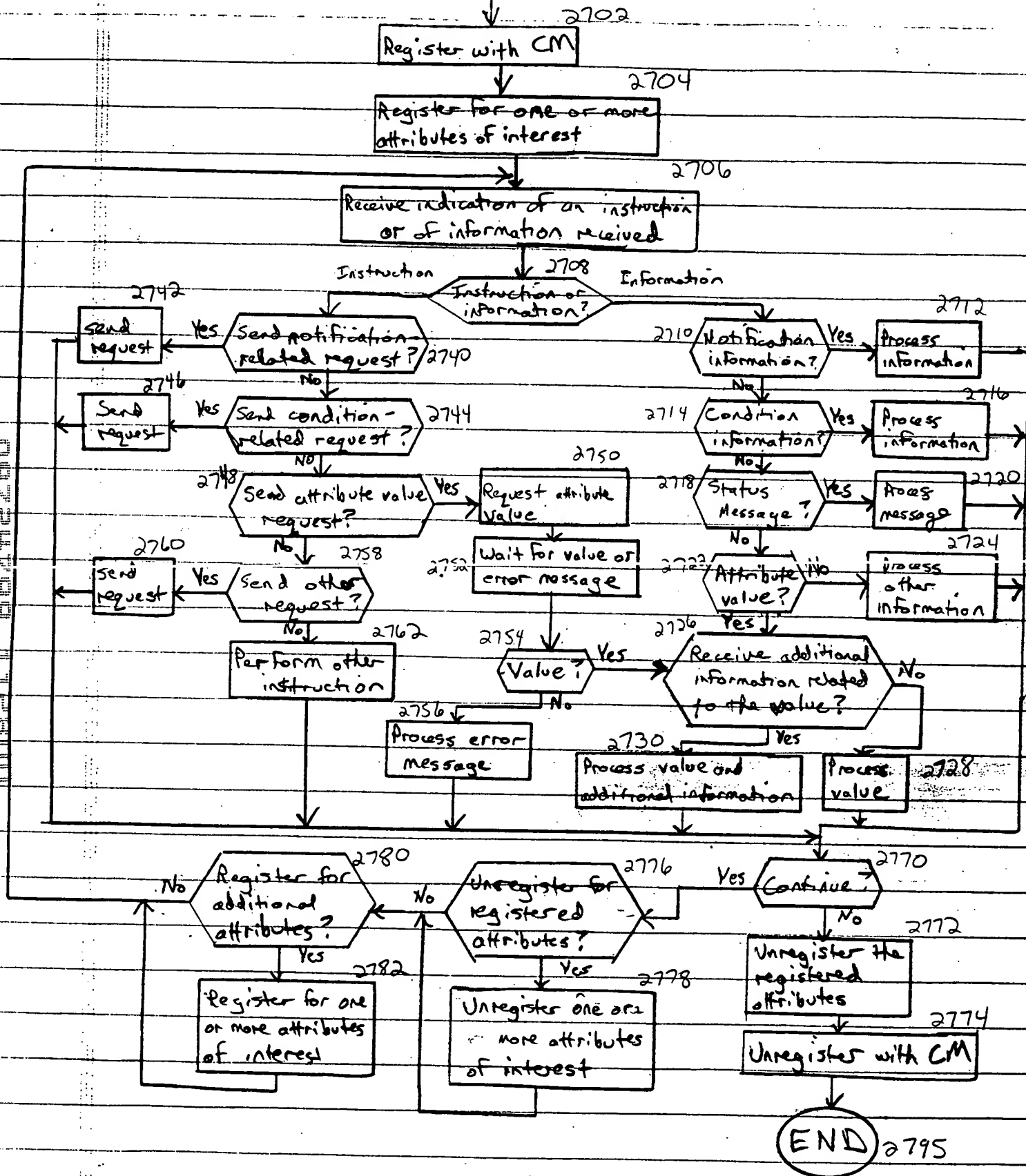


09724799-112800



Context Client Routine 2700

Fig. 27



Context Server Routine 2800

Fig. 28

